In the Specification

The specification has been amended as shown below in the "Amendments to the Specification."

In the Claims

Claims 1-3, 5-9 and 11-14 are amended as present in the "List of Current Claims."

Application No.: 09/486,723
Examiner: Odaiche T. AKPATI
Art Unit: 2135

AMENDMENTS TO THE SPECIFICATION

Page 1, after the title of the invention, please insert the following title:

B1

BACKGROUND OF THE INVENTION

Page 1, after the third paragraph, please insert the following title:

B2

SUMMARY OF THE INVENTION

Page 1, fifth paragraph (consisting of one line), please delete in its entirety.

Page 3, after the first full paragraph (between lines 25 and 26), please insert the following title:

B3

BRIEF DESCRIPTION OF THE DRAWINGS

Page 4, after the third paragraph, please insert the following title:

B4

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Page 8, beginning of last paragraph through Page 10, line 17, please amend these four paragraphs as follows:

B5

Fig. 4a shows a signal pattern on the standard data line of the system shown in Fig. 3a. The signal level is shown as a function of time t. The standard data line

transmits both the dashed-line signals 22 of transmission channel A, i.e. standard data, and the signals 20 of transmission channel B shown in the form of continuous lines, i.e. authenticity data. Since transmission of standard data via the standard data line is defined by ISO standard 7816 and transmission of authenticity data is to be effected in conformity with ISO without impairing the standard data and at high speed, one has used transition regions TZ defined in the ISO standard which are disposed at the beginning and end of each data signal and within which the signal is not scanned and evaluated. The signal pattern within the transition regions thus has no influence on the evaluation of the signal according to ISO standard 7816 and can be used for transmitting authenticity data. For this purpose, the authenticity data are modulated upon the signal for the standard data by means of a suitable modulation method, e.g. a, amplitude modulation, frequency modulation, pulse-coded modulation, etc. For scanning and evaluating the authenticity data one then of course requires an additional device since a chip card designed solely by the ISO standard would overlook authenticity data contained in the transition regions. Thus, additional apparatus 4 not present in conventional chip cards is already required for reading the authenticity data, which considerably impedes unauthorized reproduction of inventive chip card 1. Additional apparatus 4, which is not present in standard chip cards, is also necessary for transmitting authenticity data within the transition region and ultimately also for generating authenticity data. Corresponding additional apparatus 6 is also required in external device 2. One thus attains a very high security level altogether.

Fig. 4b shows a signal pattern over time on the standard data line which differs from the pattern shown in Fig. 4a in that authenticity data are transmitted as analog signals 24. Otherwise the signal pattern in Fig. 4b meets the same criteria as underlie Fig. 4a, i.e. authenticity data are communicated within transition regions TZ of standard data and one can use the modulation methods stated for Fig. 4a. Processing of the signals shown in Fig. 4b is effected using the system according to Fig. 3b. The system shown in Fig. 3a is unsuitable since mixing/demixing modules 7

and 8 shown in Fig. 3b are required for separating and bringing together signals for authenticity data and signals for standard data. The use of analog signals for data transmission impedes unauthorized reproduction of chip card 1 or external device 2 even further since this requires additional know-how for integrating the required analog technology into chip card 1. This knowledge of digital technology required for constructing conventional chip cards is insufficient alone.

B5

Fig. 5a shows the signal pattern on the standard line for a variant of logical separation of transmission channels A and B. The signal 28 for standard data is dashed, the signal 26 for authenticity data is continuous. In this embodiment, tolerance T permitted by ISO standard 7816 for the signal level of standard data is used for transmitting authenticity data. For this purpose the authenticity signal is superimposed on the standard data signal, the level of the authenticity signal being within the permissible tolerance range of the signal for standard data. One must make sure that the actually occurring level fluctuations of the standard data signal together with the superimposed authenticity signal do not cause tolerance range T to be exceeded. Besides the standard data signal, the basic signal for superimposition selected can be any signal, e.g. the clock signal or the signal for the operating voltage. In all cases authenticity data can be transmitted via existing lines or transmission paths, the signals transmitted via the same line or transmission path being separated only logically.

Fig. 45b shows the time behavior of signals meeting similar conditions to the signals according to Fig. 5a. the main difference over Fig. 5a is that authenticity data Are transmitted by means of analog signals 30, i.e. in contrast to Fig. 5a the originally existing signal is superimposed not by a digital signal but by an analog signal, tolerance range T also being taken into account here. Like the signal pattern according to Fig. 5a, the signal pattern according to Fig. 5b is processed or generated with the system shown in Fig. 3b. Mixer/demixer 8, 8 is again used for

B5

superimposing and separating the analog or digital authenticity signal and the originally existing signal.